What is claimed is:

1. A reticle chuck for use in a microlithography apparatus, situated between an upstream illumination-optical system and a downstream projection-optical system of the microlithography apparatus, the reticle chuck comprising a downstream-facing reticle-mounting surface and being configured to hold a reticle on the reticle-mounting surface.

2. The reticle chuck of claim 1, further comprising at least one electrostatic electrode situated relative to the reticle-mounting surface and configured to attract and hold the reticle electrostatically to the reticle-mounting surface.

3. The reticle chuck of claim 1, wherein the reticle-mounting surface defines at least one vacuum orifice connected to a vacuum source and configured to hold the reticle to the reticle-mounting surface by a gas-pressure differential from outside the vacuum orifice to inside the vacuum orifice.

4. The reticle chuck of claim 1, further comprising a catching member situated and configured to catch and hold the reticle at least whenever the reticle has been unintentionally released in a downstream direction from the reticle-mounting surface.

5. The reticle chuck of claim 1, further comprising a peripheral portion and at least one strut portion extending across an open region between opposing members of the peripheral portion, wherein the peripheral portion and strut portion define respective downstream-facing surfaces constituting respective portions of the reticle-mounting surface.

6. The reticle chuck of claim 5, further comprising multiple electrostatic electrodes situated relative to the reticle-mounting surface and configured to attract and hold the reticle electrostatically to the reticle-mounting surface, wherein at least one respective electrode is associated with the downstream-facing surface of the peripheral portion and at least one respective electrode is associated with the downstream-facing surface of the strut portion.

7. The reticle chuck of claim 5, further comprising at least one respective vacuum orifice defined in the downstream-facing surface of the peripheral portion and at least one respective vacuum orifice defined in the downstream-facing surface of the strut portion.

8. In combination:

a reticle; and

a reticle chuck configured to be positioned between an upstream illumination-optical system and a downstream projection-optical system of a microlithography apparatus, the reticle chuck comprising a downstream-facing reticle-mounting surface and being configured to hold the reticle on the reticle-mounting surface.

9. The combination of claim 8, further comprising multiple electrostatic electrodes situated relative to the reticle-mounting surface and configured to attract and hold the reticle electrostatically to the reticle-mounting surface.

10. The combination of claim 8, wherein the reticle-mounting surface defines at least one vacuum orifice connected to a vacuum source and configured to hold the reticle to the reticle-mounting surface by a gas-pressure differential from outside the vacuum orifice to inside the vacuum orifice.

11. The combination of claim 8, wherein the reticle chuck further comprises a peripheral portion and at least one strut portion extending across an open region between opposing members of the peripheral portion, wherein the peripheral portion and strut portion define respective downstream-facing surfaces constituting respective portions of the reticle-mounting surface.

12. The combination of claim 11, further comprising at least one respective electrostatic electrode situated relative to the downstream-facing surface of the peripheral portion and at least one respective electrostatic electrode situated relative to the downstream-facing surface of the strut portion, the electrodes each being configured to attract and hold the reticle electrostatically to the reticle-mounting surface.

13. The combination of claim 11, further comprising at least one respective vacuum orifice defined in the downstream-facing surface of the peripheral portion and at least one respective vacuum orifice defined in the downstream-facing surface of the strut portion, the vacuum orifices being configured to hold the reticle to the reticle-mounting surface by a gas-pressure differential from outside the vacuum orifices to inside the vacuum orifices.

14. The combination of claim 8, further comprising a catching member situated and configured to catch and hold the reticle at least whenever the reticle has been unintentionally released from the reticle-mounting surface.

15. The combination of claim 8, wherein the reticle is fabricated from reticle substrate selected from the group consisting of silicon, silicon compounds, glass, quartz, gold, and diamond.

16. The combination of claim 8, wherein the reticle is a divided reticle.

17. The combination of claim 16, wherein the reticle selected from the group consisting of stencil reticles and membrane reticles.

18. The combination of claim 8, wherein the reticle has an upstream-facing surface configured to be held on the reticle-mounting surface, and a downstream-facing surface.

19. The combination of claim 18, wherein the downstream-facing surface of the reticle is a pattern-defining surface.

20. A microlithography apparatus, comprising:

an illumination optical system;

a projection-optical system; and

a reticle-holding device defining a downstream-facing reticle-mounting surface, the reticle-holding device being situated between the illumination-optical system and the projection-optical system and configured to hold a reticle on the reticle-mounting surface.

21. The apparatus of claim 20, wherein the reticle-holding device further comprises at least one electrostatic electrode situated relative to the reticle-mounting surface and configured to attract and hold the reticle electrostatically to the reticle-mounting surface.

22. The apparatus of claim 21, further comprising a power source connected to the at least one electrode and configured to provide electrical power to the at least one electrode whenever the reticle is to be attracted to the reticle-mounting surface in an electrostatic manner.

23. The apparatus of claim 20, wherein the reticle-mounting surface defines at least one vacuum orifice connected to a vacuum source and configured to

hold the reticle to the reticle-mounting surface by a gas-pressure differential from outside the vacuum orifice to inside the vacuum orifice.

24. The apparatus of claim 23, further comprising a vacuum source connected to the at least one vacuum orifice and configured to reduce a gas pressure in the at least one vacuum orifice relative to a gas pressure outside the at least one vacuum orifice whenever the reticle is to be urged in contact with the reticle-mounting surface.

25. The apparatus of claim 20, wherein the reticle-holding device further comprises a catching member situated and configured to catch and hold the reticle at least whenever the reticle has been unintentionally released from the reticle-mounting surface.

26. The apparatus of claim 20, wherein the reticle-holding device further comprises a peripheral portion and at least one strut portion extending across an open region between opposing members of the peripheral portion, wherein the peripheral portion and strut portion define respective downstream-facing surfaces constituting respective portions of the reticle-mounting surface.

27. The apparatus of claim 26, further comprising at least one respective electrostatic electrode situated relative to the downstream-facing surface of the peripheral portion and at least one respective electrostatic electrode situated relative to the downstream-facing surface of the strut portion, the electrodes each being configured to attract and hold the reticle electrostatically to the reticle-mounting surface.

28. The apparatus of claim 26, further comprising at least one respective vacuum orifice defined in the downstream-facing surface of the peripheral portion and at least one respective vacuum orifice defined in the downstream-facing surface

of the strut portion, the vacuum orifices being configured to hold the reticle to the reticle-mounting surface by a gas-pressure differential from outside the vacuum orifices to inside the vacuum orifices.

29. The apparatus of claim 20, further comprising a reticle stage to which the reticle-holding device is mounted, the reticle stage being situated and configured to move the reticle-holding device in at least one dimension relative to the illumination-optical system and projection-optical system.

30. The apparatus of claim 20, wherein the illumination-optical system and projection-optical system are configured to pass a charged particle beam.

31. The apparatus of claim 20, wherein the illumination-optical system and projection-optical system are configured to pass a beam of electromagnetic radiation.

32. The apparatus of claim 20, further comprising a reticle-height-measurement device situated and configured to measure a distance from the reticle to the projection-optical system.

33. The apparatus of claim 32, wherein the reticle-height measurement device is configured to direct a laser beam at grazing incidence on the downstream-facing surface of the reticle.

34. In a method for performing microlithography in which an energy beam is passed through an illumination-optical system to a reticle and from the reticle through a projection-optical system to a substrate, a method for holding the reticle relative to the energy beam, comprising:

situating a reticle chuck between the illumination-optical system and the projection-optical system, the reticle chuck comprising a downstream-facing reticle-

mounting surface configured for holding an upstream-facing surface of the reticle; and

mounting the reticle to the reticle chuck.

35. The method of claim 34, wherein the step of mounting the reticle to the reticle chuck comprises attaching the upstream-facing surface of the reticle to the reticle-mounting surface by electrostatic attraction.

36. The method of claim 34, wherein the step of mounting the reticle to the reticle chuck comprises attaching the upstream-facing surface of the reticle to the reticle-mounting surface by vacuum suction.

37. The method of claim 34, wherein:

the reticle chuck is configured with a peripheral portion and at least one strut portion extending across an open region between opposing members of the peripheral portion;

the peripheral portion and strut portion define respective downstream-facing surfaces constituting respective portions of the reticle-mounting surface; and

the step of mounting the reticle to the reticle chuck comprises attaching the upstream-facing surface of the reticle to the respective portions of the reticle-mounting surface on the peripheral portion and strut portion.

38. In combination:

a reticle blank; and

a chuck configured to be positioned downstream of an optical system of a reticle-imprinting apparatus, the chuck comprising a downstream-facing mounting surface and being configured to hold the reticle blank, at an imaging plane of the optical system, on the mounting surface as the reticle blank is being inscribed with a pattern by a pattern-inscribing beam passing through the optical system.

39. In a method for inscribing a pattern on a reticle blank using an inscribing beam that is passed through an inscribing-optical system, a method for holding the reticle blank relative to the inscribing beam, comprising:

situating a chuck downstream of the inscribing-optical system, the chuck comprisng a downstream-facing mounting surface configured for holding an upstream-facing surface of the reticle blank such that the reticle blank is at an imaging plane of the inscribing-optical system; and

mounting the reticle blank to the mounting surface.